EXECUTIVE SUMMARY xxvii

The West Valley Demonstration Project was established to demonstrate that technologies could be developed to safely clean up and solidify radioactive waste.

INTRODUCTION xxxiii

An environmental surveillance and monitoring program was developed and implemented to ensure that operations at the WVDP would not affect public health and safety or the environment.

ENVIRONMENTAL COMPLIANCE SUMMARY: CALENDAR YEAR 1997

xliii

Project activities are governed by federal and state regulations, Department of Energy Orders, and regulatory compliance agreements.

CHAPTER 1. ENVIRONMENTAL MONITORING PROGRAM INFORMATION

The radionuclides monitored at the Project are those that have the potential to contribute a dose above background or that are most abundant in air and water effluents discharged from the site.

Introduction	1-1
Radiation and Radioactivity	1-1
Measurement of Radioactivity	1-2
Measurement of Dose	1-4
Environmental Monitoring Program Overview	1-4
Data Reporting	1-5
1997 Changes in the Environmental Monitoring Program	1-6
Vitrification Overview	1-6
Pretreatment Accomplishments	1-7
Preparation for Vitrification	1-7
1997 Activities at the WVDP	1-8
Vitrification	1-8
Environmental Management	1-8
Waste Management	1-10
National Environmental Policy Act Activities	1-11
Self-Assessments	1-12
Occupational Safety and Environmental Training	1-12

Performance Measures	1-13
Radiation Doses to the Maximally Exposed Off-Site Individual	1-13
SPDES Permit Limit Exceedances	1-14
Waste Minimization and Pollution Prevention	1-14
Spills and Releases	1-15
Vitrification	1-15
CHAPTER 2. ENVIRONMENTAL MONITORING	
The West Valley Demonstration Project's environmental monitoring program inclusional sampling of liquid and air effluents both on- and off-site. Deer, fish, milk, hay, and vegetables also are sampled.	O
Pathway Monitoring	2-1
Air and Water Pathways	2-1
Sampling Codes	2-2
Air Sampler Location and Operation	2-2
Water Sampler Location and Operation	2-2
Radiological Monitoring	2-2
Surface Water and Sediment Monitoring	2-2
Air Monitoring	2-14
Off-Site Surface Soil Sampling	2-21
Radioactivity in the Food Chain	2-21
Direct Environmental Radiation Monitoring	2-25
Meteorological Monitoring	2-30
Special Monitoring	2-31
Investigation of Increased Iodine Emissions from the Main Stack	2-31
Closed Landfill Maintenance	2-32
WNNDADR Tritium Sampling	2-32
Low-level Waste Treatment Facility Investigation	2-32
Nonradiological Monitoring	2-33
Air Monitoring	2-33
Surface Water Monitoring	2-33
Drinking Water Monitoring	2-35

CHAPTER 3. GROUNDWATER MONITORING

Groundwater is routinely sampled for radiological and chemical parameters both inside the WVDP site security fence and outside the site to determine and document any effect of site activities on groundwater quality.

Geological History of the West Valley Site	3-1
Surface Water Hydrology of the West Valley Site	3-2
Hydrogeology of the West Valley Site	3-2
Routine Groundwater Monitoring Program Overview	3-6
Groundwater Monitoring Activities	3-6
Monitoring Well Network	3-6
History of the Monitoring Program	3-8
Annual Analytical Trigger Limit Review	3-9
1997 Groundwater Monitoring Results	3-9
Presentation of Results in Tables	3-9
Presentation of Results in Graphs	3-10
Results of Radiological Analyses	3-11
Long-term Trends of Gross Beta and Tritium at Selected Groundwater Monitoring Locations	3-11
North Plateau Seeps	3-13
North Plateau Well Points	3-14
Results of Monitoring at the NDA	3-14
Results of Radioisotopic Sampling	3-14
Volatile and Semivolatile Organic Compounds	3-14
Special Groundwater Monitoring	3-15
Interim Mitigative Measures near the Leading Edge of the Gross Beta Plume on the	
North Plateau	3-15
1997 Geoprobe® Investigation on the North Plateau	3-16
Northeast Swamp Drainage Monitoring	3-17
Special Monitoring for the North Plateau Groundwater Quality Early Warning Evaluation	3-18
Pilot Program Investigating Chromium and Nickel in the Sand and Gravel Unit	3-18
Results of Off-site Groundwater Monitoring	3-19
Summary of Site Groundwater Monitoring	3-19

CHAPTER 4. RADIOLOGICAL DOSE ASSESSMENT

Because of the difficulty of directly measuring any dose contributed by the WVDP to the off-site environment and the public, computer models are used to calculate dose estimates. Estimates are based on concentrations of radionuclides measured in air and water collected from on-site effluent points.

Introduction	4-1
Radioactivity	4-1
Radiation Dose	4-2
Units of Measurement	4-2
Sources of Radiation	4-3
Health Effects of Low-level Radiation	4-4
Exposure Pathways	4-4
Land Use Survey	4-4
1997 Deer Management Program	4-4
Radioactive Vitrification Operations	4-6
Dose Assessment Methodology	4-6
Predictive Computer Modeling	4-6
Environmental Media Concentrations	4-6
Airborne Releases	4-8
Waterborne Releases	4-8
Environmental Media Concentrations	4-9
Predicted Dose from Airborne Emissions	4-10
Predicted Dose from Waterborne Releases	4-12
Predicted Dose from all Pathways	4-13
Unplanned Releases	4-14
Risk Assessment	4-14
Summary	4-14

CHAPTER 5. QUALITY ASSURANCE

The West Valley Demonstration Project's quality assurance program certifies that sample collection and analyses are consistent, precise, and accurate.

Organizational Re	sponsibilities	5-1			
Program Design					
Procedures					
Quality Control in the Field					
Quality Control in	the Laboratory	5-3			
Personnel Training	g	5-5			
Record Keeping		5-5			
Chain-of-Custody	Procedures	5-6			
Audits and Apprai	isals	5-6			
Self-Assessments		5-6			
Lessons Learned 1	Program	5-7			
Data Management	and Data Validation	5-7			
Data Reporting		5-7			
Summary		5-8			
APPENDIX A:	1997 Environmental Monitoring Program				
APPENDIX B:	Environmental Regulations, Orders, Standards, and Permits				
APPENDIX C-1:	Summary of Water and Sediment Monitoring Data				
APPENDIX C-2:	Summary of Air Monitoring Data				
APPENDIX C-3:	Summary of Biological Data				
APPENDIX C-4:	Summary of Direct Radiation Monitoring Data				
APPENDIX C-5:	Summary of Nonradiological Monitoring Data				
APPENDIX C-6:	Summary of Meteorological Data				
APPENDIX D:	Summary of Quality Assurance Crosscheck Analyses				
APPENDIX E:	Summary of Groundwater Monitoring Data				
APPENDIX F:	Summary of NYSERDA Groundwater Monitoring Data				

REFERENCES

GLOSSARY

ACRONYMS

UNITS OF MEASURE

SCIENTIFIC NOTATION

DISTRIBUTION

ACKNOWLEDGMENTS

Summary List of Maps

Location of the Western New York Nuclear Service Center	XXXV
On-site Air Monitoring and Sampling Points	2-4
Location of Perimeter Air Samplers	2-5
On-site Surface Water Sampling Locations	2-6
Off-site Surface Water and Sediment Sampling Locations	2-7
Near-site Biological Sampling Points	2-22
Location of On-site Thermoluminescent Dosimeters (TLDs)	2-26
Location of Off-site Thermoluminescent Dosimeters (TLDs)	2-27
SPDES Monitoring Points	2-34
WVDP Groundwater Monitoring Program Locations Sampled in 1997	3-3
North Plateau Gross Beta Plume Area: Fourth-Quarter 1997 Results	3-12
On-site Air Monitoring and Sampling Points	A-45
On-site Surface Water and Soil Sampling Locations	A-46
On-site Groundwater Monitoring Network	A-47
Off-site Surface Water and Sediment Sampling Locations	A-48
Near-site Drinking Water and Biological Sample Points	A-49
Perimeter Air, Soil, and Fallout Sampling Point Locations	A-50
Off-site Thermoluminescent Dosimeter (TLD) Locations	A-51
On-site Thermoluminescent Dosimeter (TLD) Locations	A-52
Environmental Sample Points more than 5 Kilometers from the WVDP Site	A-53

List of Figures

INTRODUCTION

1.	Location of the Western New York Nuclear Service Center	XXXV
CHAPT	ER 1	
1-1.	Annual Effective Dose Equivalent to the Maximally Exposed Off-site Individual	1-13
1-2.	SPDES Permit Exceedances by Year	1-14
1-3.	Waste Reduction Percentage Exceeding Goals	1-15
1-4.	Number of Immediately Reportable Spills and Releases	1-15
1-5.	Number of Curies Transferred per Month to the Vitrification Facility	1-16
CHAPT	ER 2	
2-1.	On-site Air Monitoring and Sampling Points	2-4
2-2.	Location of Perimeter Air Samplers	2-5
2-3.	On-site Surface Water Sampling Locations	2-6
2-4.	Off-site Surface Water and Sediment Sampling Locations	2-7
2-5.	Eleven-Year Trends of Gross Alpha, Gross Beta, and Tritium Concentrations at Sampling Location WNSP006	2-8
2-6.	Eleven-Year Trends of Gross Alpha, Gross Beta, and Tritium Concentrations at Sampling Location WNNDADR	2-10
2-7.	Eleven-Year Trends of Gross Alpha, Gross Beta, and Tritium Concentrations at Sampling Location WFFELBR	2-12
2-8.	Twelve-Year Trends of Cesium-137 in Stream Sediment at Two Locations Upstream and Three Locations Downstream of the WVDP	2-14
2-9.	Comparison of Cesium-137 with Naturally Occurring Potassium-40 Concentrations in 1997 at Downstream Sampling Location SFTCSED	2-15

2-10.	Eleven-Year Trends of Gross Alpha and Gross Beta Activity at the Main Stack Sampling Location (ANSTACK)	
2-11.	Eleven-Year Trends of Gross Alpha and Gross Beta Concentrations at the Rock Springs Road Sampling Location (AFRSPRD)	2-18
2-12.	Near-site Biological Sampling Points	2-22
2-13.	Location of On-site Thermoluminescent Dosimeters (TLDs)	2-26
2-14.	Location of Off-site Thermoluminescent Dosimeters (TLDs)	2-27
2-15.	Fourteen-Year Trend of Environmental Radiation Levels	2-29
2-16	SPDES Monitoring Points	2-34
CHAPTE	R 3	
3-1.	WVDP Groundwater Monitoring Program Locations Sampled in 1997	3-3
3-2	Geologic Cross Section through the North Plateau	3-4
3-3.	Geologic Cross Section through the South Plateau	3-5
3-4.	North Plateau Gross Beta Plume Area: Fourth-Quarter 1997 Results	3-12
3-5.	Annualized Average Strontium-90 Concentrations at Sampling Location WNSWAMP	3-17
Groundwa	ter Trends	
3-6.	Seven-Year Trends of Averaged Gross Beta Activity at Selected Locations in the Sand and Gravel Unit	3-21
3-7.	Twelve-Year Trends of Averaged Gross Beta Activity at Selected Locations in the Sand and Gravel Unit	3-21
3-8.	Seven-Year Trends of Averaged Tritium Activity at Selected Locations in the Sand and Gravel Unit	3-22
3-9.	Twelve-Year Trends of Averaged Tritium Activity at Selected Locations in the Sand and Gravel Unit	3-22

3-10.	Eight-Year Trends of 1,1-DCA at Selected Monitoring Locations	3-23
3-11.	Seven-Year Trends of Dichlorodifluoromethane (DCDFMeth) at Selected Monitoring Locations	3-23
3-12.	Seven-Year Trends of 1,2-DCE and 1,1,1-TCA at Well 8612	3-24
СНАРТ	TER 4	
4-1.	Comparison of Annual Background Radiation Dose to the Dose from 1997 WVDP Effluents	4-3
4-2.	Effective Dose Equivalent from Liquid and Airborne Effluents to a Maximally Exposed Individual Residing near the WVDP	4-12
4-3.	Collective Effective Dose Equivalent to the Population Residing within 80 Kilometers of the WVDP from Liquid and Airborne Effluents	4-13
APPEN	DIX A	
A-1.	On-site Air Monitoring and Sampling Points	A-45
A-2.	On-site Surface Water and Soil Sampling Locations	A-46
A-3.	On-site Groundwater Monitoring Network	A-47
A-4.	Off-site Surface Water and Sediment Sampling Locations	A-48
A-5.	Near-site Drinking Water and Biological Sample Points	A-49
A-6.	Perimeter Air, Soil, and Fallout Sampling Point Locations	A-50
A-7.	Off-site Thermoluminescent Dosimeter (TLD) Locations	A-51
A-8.	On-site Thermoluminescent Dosimeter (TLD) Locations	A-52
A-9.	Environmental Sample Points more than 5 Kilometers from the WVDP Site	A-53

٨	D	D	C	ΝI	\mathbf{n}	IV	C-	1
А	r	r	г	N	.,	I A	. -	4

C-4.1.	1997 Average Quarterly Gamma Exposure Rates around the West Valley Demonstration Project Site	C4-6
C-4.2.	1997 Average Quarterly Gamma Exposure Rates on the West Valley Demonstration Project Site	C4-6
APPEN	DIX C-5	
C-5.1	SPDES Monitoring Points	C5-17
APPEN	DIX C-6	
C6-1.	Wind Frequency Rose: 10-meter at the Primary Monitoring Station	C6-3
C6-2.	Wind Frequency Rose: 60-meter at the Primary Monitoring Station	C6-4
C6-3.	Wind Frequency Rose: 10-meter at the Regional Monitoring Station	C6-5
C6-4.	1997 Weekly Precipitation	C6-6
C6-5.	1997 Cumulative Precipitation	C6-6
APPEN	DIX E	
Groundy E-1.	vater Samples from the Sand and Gravel Unit pH	E-29
E-2.	Conductivity	E-29
E-3.	Gross Alpha	E-30
E-4.	Gross Beta	E-30
E-4a.	Gross Beta (magnified scale of Fig. E-4)	E-31
E-4b.	Gross Beta (magnified scale of Fig. E-4a)	E-31

E-5.	Tritium Activity	E-32					
E-5a.	Tritium Activity (magnified scale of Fig. E-5)						
<i>Ground</i> w E-6.	water Samples from the Till-Sand Unit pH	E-33					
E-7.	Conductivity	E-33					
E-8.	Gross Alpha	E-33					
E-9.	Gross Beta	E-33					
E-10.	Tritium Activity	E-34					
<i>Ground</i> w E-11.	water Samples from the Weathered Lavery Till Unit pH	E-34					
E-12.	Conductivity	E-34					
E-13.	Gross Alpha	E-34					
E-14.	Gross Beta	E-35					
E-14a.	Gross Beta (magnified scale of Fig. E-14)	E-35					
E-15.	Tritium Activity	E-35					
<i>Ground</i> w E-16.	water Samples from the Unweathered Lavery Till Unit pH	E-35					
E-17.	Conductivity	E-36					
E-18.	Gross Alpha	E-36					
E-19.	Gross Beta	E-36					
E-19a	Gross Beta (magnified scale of Fig. E-19)	E-36					
E-20.	Tritium Activity	E-37					

Groundwat E-21.	pH	E-37
E-22.	Conductivity	E-37
E-23.	Gross Alpha	E-37
E-24.	Gross Beta	E-38
E-25.	Tritium Activity	E-38

2-1.	1997 Gross Alpha Concentrations at Surface Water Sampling Locations	2-9
2-2.	1997 Gross Beta Concentrations at Surface Water Sampling Locations	2-9
2-3.	1997 Gross Alpha Concentrations at Off-Site, Perimeter, and On-Site Ambient Air Sampling Locations	2-19
2-4.	1997 Gross Beta Concentrations at Off-Site, Perimeter, and On-Site Ambient Air Sampling Locations	2-19
CHAPTI	ER 3	
3-1.	1997 Groundwater Sampling and Analysis Agenda	3-7
CHAPTI	ER 4	
4-1.	Potential Off-Site Exposure Pathways Under Existing WVDP Conditions	4-5
4-2.	Summary of Annual Effective Dose Equivalents to an Individual and Population from WVDP Releases in 1997	4-7
APPENI	DIX B	
B-1.	Department of Energy Radiation Protection Standards and Derived Concentration Guides	B-3
B-2.	Environmental Regulations, Orders, and Standards	B-4
В-3.	West Valley Demonstration Project Environmental Permits	B-5
APPENI	DIX C-1	
C-1.1.	Total Radioactivity of Liquid Effluents Released from Lagoon 3 in 1997	C1-3
C-1.2.	Comparison of 1997 Lagoon 3 Liquid Effluent Radioactivity Concentrations with Department of Energy Guidelines	C1-4

C-1.3.	(WNSP005)	C1-5
C-1.4.	Radioactivity Concentrations in Surface Water Downstream of the WVDP at Frank's Creek (WNSP006)	C1-6
C-1.5.	Radioactivity Concentrations in Surface Water: Sewage Treatment Facility (WNSP007)	C1-7
C-1.6.	Radioactivity Concentrations in Surface Water: French Drain (WNSP008)	C1-7
C-1.7.	Radioactivity Concentrations in Surface Water at the Northeast Swamp (WNSWAMP)	C1-8
C-1.8.	Radioactivity Concentrations in Surface Water at the North Swamp (WNSW74A)	C1-9
C-1.9.	Radioactivity Concentrations and pH in Surface Water: Frank's Creek East of the SDA (WNFRC67)	C1-9
C-1.10.	Radioactivity Concentrations and pH in Surface Water: Erdman Brook (WNERB53)	C1-10
C-1.11.	Radioactivity Concentrations and pH in Surface Water: Cooling Tower Basin (WNCOOLW)	C1-10
C-1.12.	Radioactivity Concentrations and pH in Surface Water: SDA Drainage (WNSDADR)	C1-11
C-1.13.	Radioactivity Concentrations and pH in Surface Water: Waste Tank Farm Underdrain (WN8D1DR)	C1-11
C-1.14.	Radioactivity Concentrations in Surface Water: Drum Cell Drainage (WNDCELD)	C1-12
C-1.15.	Radioactivity Concentrations, pH, and Conductivity: Environmental Laboratory Potable Water (WNDNKEL)	C1-12
C-1.16.	Radioactivity Concentrations, pH, and Conductivity: Maintenance Shop Potable Water (WNDNKMS)	C1-13
C-1.17.	Radioactivity Concentrations, pH, and Conductivity: Main Plant Potable Water (WNDNKMP)	C1-13

C-1.18.	Radioactivity Concentrations and Water Quality Parameters: Utility Room Potable Water (WNDNKUR)	C1-14
C-1-19.	Radioactivity Concentrations and Water Quality Parameters: Storage and Disposal Area Drainage (WNNDADR)	C1-15
C-1.20.	Radioactivity Concentrations, NPOC, and TOX in Groundwater at the NDA Interceptor Trench (WNNDATR)	C1-16
C-1.21.	Radioactivity Concentrations and Water Quality Parameters in Surface Water at the Standing Water (WNSTAW-series) Sampling Locations	C1-17
C-1.22.	Radioactivity Concentrations in Surface Water Upstream of the WVDP in Buttermilk Creek at Fox Valley (WFBCBKG)	C1-18
C-1.23.	pH and Radioactivity Concentrations in Surface Water Downstream of the WVDP in Buttermilk Creek at Thomas Corners (WFBCTCB)	C1-19
C-1.24.	pH and Radioactivity Concentrations in Surface Water Downstream of the WVDP in Cattaraugus Creek at Felton Bridge (WFFELBR)	C1-19
C-1.25.	Radioactivity Concentrations in Surface Water Upstream of the WVDP in Cattaraugus Creek at Bigelow Bridge (WFBIGBR)	C1-20
C-1.26.	pH, Conductivity, and Radioactivity Concentrations in Potable Well Water around the WVDP	C1-20
C-1.27.	Surface Water Quality at Locations WFBCBKG, WNSP006, WNSWAMP, and WNSW74A	C1-21
C-1.28.	Radioactivity Concentrations and Metals Concentrations in On-site Soils/Sediments	C1-22
C-1.29.	Radioactivity Concentrations in Surface Soil Collected at Air Sampling Stations around the WVDP	C1-23
C-1.30.	Radioactivity Concentrations in Stream Sediments around the WVDP	C1-24

List of Tables

APPENDIX C-2

C-2.1.	Airborne Radioactive Effluent Totals from the Main Ventilation Stack	C2-3
C-2.2.	Comparison of 1997 Main Stack Exhaust Radioactivity Concentrations with Department of Energy Guidelines	C2-4
C-2.3.	Airborne Radioactive Effluent Totals from the Vitrification System Ventilation Stack (ANVITSK)	C2-5
C-2.4.	Airborne Radioactive Effluent Totals from the Seismic Sampler (ANSEISK) for the Vitrification System (HVAC) Ventilation Stack	C2-6
C-2.5.	Airborne Radioactive Effluent Totals from the O1-14 Building Ventilation Exhaust (ANCSSTK)	C2-7
C-2.6.	Airborne Radioactive Effluent Totals from the Contact Size-reduction Facility Ventilation Stack (ANCSRFK)	C2-8
C-2.7.	Airborne Radioactive Effluent Totals from the Supernatant Treatment System Ventilation Stack (ANSTSTK)	C2-9
C-2.8.	Airborne Radioactive Effluent Totals from the Container Sorting and Packaging Facility (ANCSPFK)	C2-10
C-2.9.	Airborne Radioactive Effluent Totals from the Low-level Waste Treatment Facility (ANLLWTVH)	C2-11
C-2.10.	Airborne Radioactive Effluent Totals from the Laundry Change Room (ANLAUNV)	C2-11
C-2.11.	Radioactivity Concentrations in Airborne Particulates at the Lag Storage Area Air Sampler (ANLAGAM)	C2-12
C-2.12.	Radioactivity Concentrations in Airborne Particulates at the NDA Air Sampler (ANNDAAM)	C2-13
C-2.13.	Airborne Radioactivity Concentrations at the SDA Trench 9 Air Sampler (ANSDAT9)	C2-14
C-2.14.	Airborne Radioactive Effluent Totals from Outdoor Ventilation Enclosures/Portable Ventilation Units	C2-15
C-2.15.	Airborne Radioactive Effluent Totals from the Demonstration CO ₂ Decontamination Facility (ANCO2DV)	C2-16

C-2.16.	Airborne Radioactivity Concentrations at the Rock Springs Road Air Sampler (AFRSPRD)	C2-17
C-2.17.	Radioactivity Concentrations in Airborne Particulates at the Dutch Hill Air Sampler (AFBOEHN)	C2-18
C-2.18.	Radioactivity Concentrations in Airborne Particulates at the Fox Valley Air Sampler (AFFXVRD)	C2-18
C-2.19.	Radioactivity Concentrations in Airborne Particulates at the Bulk Storage Warehouse Air Sampler (AFBLKST)	C2-19
C-2.20.	Radioactivity Concentrations in Airborne Particulates at the Route 240 Air Sampler (AFRT240)	C2-19
C-2.21.	Radioactivity Concentrations in Airborne Particulates at the Thomas Corners Road Air Sampler (AFTCORD)	C2-20
C-2.22.	Radioactivity Concentrations in Airborne Particulates at the West Valley Air Sampler (AFWEVAL)	C2-20
C-2.23.	Radioactivity Concentrations in Airborne Particulates at the Springville Air Sampler (AFSPRVL)	C2-21
C-2.24.	Airborne Radioactivity Concentrations at the Great Valley Background Air Sampler (AFGRVAL)	C2-22
C-2.25.	Radioactivity Concentrations in Airborne Particulates at the Nashville Background Air Sampler (AFNASHV)	C2-23
C-2.26.	Radioactivity and pH in Fallout During 1997: Dutch Hill (AFDHFOP)	C2-24
C-2.27	Radioactivity and pH in Fallout During 1997: Rain Gauge (ANRGFOP)	C-2.24
C-2.28	Radioactivity and pH in Fallout During 1997: Route 240 (AF24FOP)	C-2.25
C-2.29	Radioactivity and pH in Fallout During 1997: Thomas Corners Road (AFTCFOP)	C-2.25
C-2.30	Radioactivity and pH in Fallout During 1997: Fox Valley Road (AFFXFOP)	C-2.26

٨	D	D	F	N	\mathbf{D}	IX	C	2
А	r	r	Е	IN	IJ	IA	ι	∙.⊃

C-3.1.	Radioactivity Concentrations in Milk	C3-3
C-3.2.	Radioactivity Concentrations in Meat	C3-4
C-3.3.	Radioactivity Concentrations in Food Crops	C3-5
C-3.4.	Radioactivity Concentrations in Fish Flesh from Cattaraugus Creek	C3-6
APPENDI	X C-4	
C-4.1.	Summary of 1997 Quarterly Averages of Off-site TLD Measurements	C4-3
C-4.2.	Summary of 1997 Quarterly Averages of On-site TLD Measurements	C4-4
C-4.3.	3rd-Quarter 1997 TLD Results and Instantaneous Dose Readings with a High-pressure Ion Chamber (HPIC) at Each Monitoring Location	C4-5
APPENDI	X C-5	
C-5.1.	West Valley Demonstration Project State Pollutant Discharge Elimination System (SPDES) Sampling Program	C5-3
C-5.2.	West Valley Demonstration Project 1997 SPDES Noncompliance Episodes	C5-5
C-5.3A	1997 SPDES Results for Outfall 001 (WNSP001): Water Quality	C5-6
C-5.3B	1997 SPDES Results for Outfall 001 (WNSP001): Metals	C5-8
C-5.3C	1997 SPDES Results for Outfall 001 (WNSP001): Organics	C5-10
C-5.4.	1997 SPDES Results for Outfall 007 (WNSP007): Water Quality and Iron	C5-12
C-5.5.	1997 SPDES Results for Outfall 008 (WNSP008): Water Quality	C5-13
C-5.6.	1997 SPDES Results for Outfall 001, 007, and 008: Water Quality	C5-14
C-5.7.	1997 Annual/Semiannual SPDES Results for Outfall 001 (WNSP001)	C5-15
C-5.8.	1997 Annual SPDES Results for Outfall 007 (WNSP007) and Outfall 008 (WNSP008)	C5-16

ΔPI	PFN	יוחו	X C-1	5

C-6.1.	Site Precipitation Collection Data	C6-7
C-6.2.	Annual Temperature Summary at the 10-meter Primary Meteorological Tower	C6-8
C-6.3.	Annual Barometric Pressure Summary	C6-9
APPEND	DIX D	
D-1.	Comparison of Radiological Results with Known Results of Crosscheck Samples from the DOE Environmental Measurements Laboratory Quality Assessment Program 46	D-3
D-2.	Comparison of Radiological Results with Known Results of Crosscheck Samples from the DOE Environmental Measurements Laboratory Quality Assessment Program 47	D-5
D-3.	Comparison of Radiological Results with Known Results of Crosscheck Samples from the EPA National Exposure Research Laboratory, Environmental Science Division	D-7
D-4.	Comparison of the West Valley Demonstration Project's Thermoluminescent Dosimeters with the Co-located Nuclear Regulatory Commission TLDs	D-10
D-5.	Comparison of Water Quality Parameters in Crosscheck Samples between the West Valley Demonstration Project and the EPA's 1997 Discharge Monitoring Report-Quality Assurance Study 17 for the National Pollutant Discharge Elimination System	D-11
APPEND	DIX E	
E-1.	Groundwater Monitoring Network: Super Solid Waste Management Units	E-3
E-2.	Contamination Indicator and Radiological Indicator Results for the Sand and Gravel Unit	E-7
E-3.	Contamination Indicator and Radiological Indicator Results for the Till-Sand Unit	E-11
E-4.	Contamination Indicator and Radiological Indicator Results for the Weathered Lavery Till Unit	E-12
E-5.	Contamination Indicator and Radiological Indicator Results for the Unweathered Lavery Till Unit	E-13
E-6.	Contamination Indicator and Radiological Indicator Results for the Kent Recessional Sequence	E-14

E-7.	Contamination Indicator and Radiological Indicator Results at North Plateau Seep Monitoring Locations	E-15
E-8.	Radiological Concentrations at Well Points	E-15
E-9.	Detections of Volatile Organic Compounds at Selected Groundwater Monitoring Locations	E-16
E-10.	Tributyl Phosphate Sampling Results for 1997 at Selected Groundwater Monitoring Locations	E-16
E-11.	RCRA Hazardous Constituent List and Appendix IX Metals Sampling Results	E-17
E-12.	Sampling Parameters at Early Warning Monitoring Wells	E-24
E-13.	Alpha-, Beta-, and Gamma-emitting Radioisotopic Results	E-24
E-14.	Modified Practical Quantitation Limits for Appendix IX Parameters	E-26
APPENE	DIX F	
F-1.	Contamination Indicator Results at SDA Monitoring Wells	F-3
F-2.	Radiological Indicator Results at SDA Monitoring Wells	F-5
F-3.	Radioisotopic Results at SDA Monitoring Wells	F-7